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U.S. DEPARTMENT OF COMMERCE PATE D TRADEMARK OFFICE ATTORNEY'S DOCKET NUMBER NODSKOV1 TRANMITTAL LETTER TO THE UNITED STATES U.S. APPLICATION NO. (If known, see 37 CFR 1.5) DESIGNATED/ELECTED OFFICE (DO/EO/US) **CONCERNING A FILING UNDER 35 U.S.C. 371** 10/019722 PRIORITY CLAIMED INTERNATIONAL APPLICATION NO. INTERNATIONAL FILING DATE 30 June 2000 2 July 1999 PCT/DK00/00355 TITLE OF INVENTION A HANDHELD PIEZOELECTRIC ACUPUNCTURE STIMULATOR APPLICANT(S) FOR DO/EO/US Preben NØDSKOV Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: 1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371. 2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371. 3. [X] This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. [X] The US has been elected in a Demand by the expiration of 19 months from the priority date (PCT Article 31). 5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. [ ] is attached hereto (required only if not transmitted by the International Bureau). b. [X] has been communicated by the International Bureau. c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US). 6. An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). 7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau). b. [ ] have been communicated by the International Bureau. c. [ ] have not been made; however, the time limit for making such amendments has NOT expired. d. [X] have not been made and will not be made. 8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. [ ] An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11. to 16. below concern document(s) or information included: 11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. [ ] An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. [X] A FIRST preliminary amendment. [ ] A SECOND or SUBSEQUENT preliminary amendment. 14. [ ] A substitute specification. 15. [ ] A change of power of attorney and/or address letter. 16. [X] Other items or information: [X] Courtesy copy of the International Application as published. [X] Courtesy copy of the first page of the International Publication (WO 01/01920). [X] Courtesy copy of the International Preliminary Examination Report. There were no annexes, for Annexes are attached but are not to be used for initial examination in this case.] [ ] Courtesy copy of the International Preliminary Examination Report with annexes containing pages substituted for original specification pages \_\_\_\_ and claims \_\_\_\_ to be substituted for original claims \_\_\_\_ for examination in this case. [X] Formal drawings, 2 sheets, Figures 1-3. [ ] Courtesy Copy of the International Search Report.

U.S. APPLICATION NO. (If known, see 37 CFR 1.		al Application No.		Attorney's Docket	No.		
10/019722	PCT/I	PCT/DK00/00355		NODSKOV1			
17. [xx] The following fees are submitted	CALCULATION	S PTO USE ONLY					
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months from the earliest claimed priority date (37 CFR 1.492(f)).			\$				
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b. [X] Credit Card Payment Form (PTO-2038), authorizing payment in the amount of \$585.00 is attached							
c. [ ] Please charge my Deposit Account No. 02-4035 in the amount of \$ to cover the above fees							
A duplicate copy of this sheet is enclosed.  d. [XX] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment							
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NOTE: Where an appropriate time li	mit under 37 CF	R 1.494 or 1.495 ha	s not been m	et,,a petition to revive	(37-CFR 1.137(a) or		
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Date of this submission: January 2, 200	2						
Form PTO-1390 (as slightly revised by Browdy and	Neimark)			Page 2	- 60		

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#### PRELIMINARY AMENDMENT

Honorable Commissioner for Patents Washington, D.C. 20231

Sir:

Contemporaneous with the filing of this case and prior to calculation of the filing fee, kindly amend as follows:

### IN THE SPECIFICATION

After the title please insert the following paragraph:

# -- REFERENCE TO RELATED APPLICATIONS

The present application is the national stage under 35 U.S.C. 371 of international application PCT/DK00/00355, filed June 30, 2000, which designated the United States, and which international application was published under PCT Article 21(2) in the English language.--

### REMARKS

The above amendment to the specification is being made to insert reference to the PCT application of which the present case is a U.S. national stage.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted, BROWDY AND NEIMARK, P.L.L.C. Attorneys for Applicant

By:

Roger L. Browdy

Registration No. 25,618

RLB:edg

Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
F:\,I\Inte\NODSKOV1\PTO\Preliminary Amendment.doc

# VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

After the title please insert the following paragraph:

# -- REFERENCE TO RELATED APPLICATIONS

The present application is the national stage under 35 U.S.C. 371 of international application PCT/DK00/00355, filed June 30, 2000, which designated the United States, and which international application was published under PCT Article 21(2) in the English language.--

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### A HANDHELD PIEZOELECTRIC ACUPUNCTURE STIMULATOR

The present invention relates to a handheld piezoelectric acupuncture stimulator with a pen-like, substantially electrically insulating exterior casing, at one end of which an actuator button is mounted, while the other end is provided with a contact pin retracted from an end surface intended for contact with the skin in an acupuncture zone, said contact pin being connected with a first electrode of a piezoelectric converter, the second electrode of which is in electrical connection, on one hand, with a hand contact and is mechanically operable, on the other hand, by means of a spring-loaded impact hammer operated by the actuator button for generation of a high-voltage electric pain relieving pulse with a low energy content.

From DE-A1-40 26 820 an acupuncture stimulator of this kind is known, in which the piezoelectric converter and a comparatively long contact pin connected with its first electrode are arranged in their respective electrically insulating casings, surrounded by an electrically conductive metallic exterior casing and a likewise metallic treatment head with an end surface designed for contact with the skin, respectively. The impact hammer with accompanying actuator compression spring is accommodated in a bore in the comparatively elongate actuator button, while the return spring is mounted between recessed shoulder surfaces on the actuator button and an intermediate piece arranged around the piezoelectric converter between the actuator button and the insulating casing.

The considerable number of fairly small individual components in this known stimulator complicates its manufacture and mounting, and the design with an electrically conducting exterior casing and treatment

respectively the control of the cont

head entails a less satisfactory insulation of the high-voltage electrode of the piezoelectric converter and may impair the efficiency of the stimulator.

These drawbacks are remedied by the invention by 5 a design of a stimulator of the kind defined, which is characterized in that the piezoelectric converter is mounted together with said first and second electrodes and said impact hammer with associated spring system, which comprises an actuator compression spring and a 10 return spring, in a common electrically insulating interior casing designed for form-fit mounting in the exterior casing with said contact pin being retained with a comparatively short, protruding length at one end of the interior casing, at the other end of which 15 a longitudinally displaceable impact hammer actuator is mounted, said actuator being mechanically connected with the actuator button, whereby the electric connection between the second electrode of the piezoelectric converter and said hand contact comprises a leaf spring 20 contact, which projects through the interior casing and extends between said interior casing and the exterior casing for establishing contact with the hand contact, which is designed as a contact ring.

The leaf spring contact is preferably provided with a bent end portion fixed in a recess at the free edge of an end member of the exterior casing, said end member serving as a support for the contact ring. In this way it becomes possible in a simple manner by dimensioning the bent end portion of the leaf spring contact to obtain an accurate fixing of the spark distance between the end of the contact pin and the end portion of the stimulator intended for skin contact.

Owing to the fact that the handheld stimulator is designed for operation of the actuator button by the thumb, an accurate positioning of the exterior contact

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ring for establishing contact with the user's forefinger may be obtained by mounting the actuator button in a top member placed in extension of the exterior casing and the contact ring and having a protruding abutment as support for the user's forefinger knuckle, when the actuator button is operated by the thumb.

The invention will now be explained in detail in the following with reference to the accompanying drawings, in which

10 Figs 1 and 2 show an embodiment of a piezoelectric acupuncture stimulator according to the invention in mounted condition, and an exploded view of its main components, respectively, and

Fig. 3 shows more schematically the component parts mounted in the interior casing of the stimulator.

Seen from outside, the handheld piezoelectric acupuncture stimulator comprises, as shown in Fig. 1, an electrically insulating exterior casing 1 of a suitable plastics material, for instance nylon, with a substantially conical end portion 2 in connection with a treatment head 3 designed for contact with the skin in an acupuncture point.

At the opposite end, in extension of the exterior casing 1, a likewise electrically insulating top member 25 4 is provided, in which an actuator button 5 is mounted. Since the stimulator is designed for operation of the actuator button by the thumb, the top member 4 is designed with a protruding abutment 6, which during use is placed in abutment against the forefinger 30 knuckle and thereby positions a contact ring 7 placed between the top member 4 and the exterior casing 1 in engagement with the user's forefinger.

The active components of the stimulator, which will be described below with reference to Fig. 3, are according to the invention, as shown in Fig. 2, mounted

in an electrically insulating interior casing 8, from one end of which the contact pin 9 protrudes with a comparatively short length, said contact pin being adapted to transfer the pain relieving pulses produced by the stimulator by spark formation.

The interior casing 8 is designed for form-fit mounting in the exterior casing 1, the end of the contact pin 9 being somewhat retracted from the skin abutment formed by the treatment head 3 for determining 10 a well-defined spark distance.

As likewise shown in Fig. 2, the electric connection between the earth electrode of the stimulator and the contact ring 7 is established by means of a leaf spring contact 10, which is passed through the interior casing 8 and extends between the interior casing and the exterior casing 1. The spring leaf contact 10 ends in a bent portion 11, which, for fixation of the position of the interior casing 8 in the exterior casing 1, is brought into engagement with a recess 12 at the edge of an end portion 13 of the exterior casing 1 designed to support the contact ring 7. The bent end portion 11 of the leaf spring contact 10 is retained in the recess 12 by means of a protruding cam 14 on an end member 15 of the top member 4 adapted to be inserted into the end member 13.

At the opposite end of the interior casing 8 relative to the contact pin 9, a longitudinally displaceable actuator 16 is provided for the mechanical actuation of the piezoelectric converter. In the 30 mounted condition, the actuator 16 is actuated by the actuator button 5 via a profiled pressure member 17 mounted in the top member 4.

The active components of the stimulator, which are mounted in the interior casing 8, comprise, as shown in 35 Fig. 3, both the piezoelectric converter 18 with a

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first electrode 19 in connection with the contact pin 9 protruding from one end of the interior casing 8 and a second electrode 20 in electrical connection with a contact ring 21 provided at one end of the leaf spring 5 contact 10, and the actuating mechanism designed for mechanical actuation of the converter 18, said mechanism comprising the longitudinally displaceable actuator 16 protruding from the opposite end of the interior casing 8 and having a guide 22 for an impact hammer 23 with a transverse blocking pin 24 and an actuator compression spring 25 and a return spring 27 positioned between the guide 22 and a holder 26 for the converter 18.

The mechanical function of the components shown in Fig. 3 is known per se and has the effect that by a longitudinal displacement of the actuator 18 in the interior casing 8 caused by operation of the actuator button 5, compression of the actuator compression spring 25 occurs at first, which spring by the release of the impact hammer 26 induced by the movement of the actuator with big force shoots the impact hammer towards the second electrode 20 of the converter 18. By the resulting instantaneous compression of the converter 18, the electrical pain relieving pulse with high voltage and comparatively low energy content is generated, for instance at 15,000 volt and 6 µA.

The pain relieving effect of the stimulator resides, as known per se, in that by the spark transfer of the pulse thus generated to an acupuncture point at 30 the place, which is to be relieved from pain, an actuation of the body's own endorphin pain relieving system is supposed to take place.

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#### PATENT CLAIMS

1. A handheld piezoelectric acupuncture stimulator with a pen-like, substantially electrically insulating exterior casing (1), at one end of which an actuator 5 button (5) is mounted, while the other end is provided with a contact pin (9) retracted from an end surface (3) intended for contact with the skin in an acupuncture zone, said contact pin being connected with a first electrode (19) of a piezoelectric converter (18), 10 the second electrode (20) of which is in electrical connection, on one hand, with a hand contact (7) and is mechanically operable, on the other hand, by means of a spring-loaded impact hammer (23) operated by the actuator button (5) for generation of a high-voltage 15 electric pain relieving pulse with a low energy concharacterized in piezoelectric converter (18) is mounted together with said first and second electrodes (19, 20) and said impact hammer (23) with associated spring system, which 20 comprises an actuator compression spring (25) and a return spring (27), in a common electrically insulating interior casing (8) designed for form-fit mounting in the exterior casing (1) with said contact pin (9) being retained with a comparatively short, protruding length 25 at one end of the interior casing (8), at the other end of which a longitudinally displaceable impact hammer actuator (16) is mounted, said actuator being mechanically connected with the actuator button (5), whereby the electric connection between the second electrode 30 (20) of the piezoelectric converter (18) and said hand contact (7) comprises a leaf spring contact (10), which projects through the interior casing (8) and extends between said interior casing and the exterior casing (1) for establishing contact with the hand contact (7),

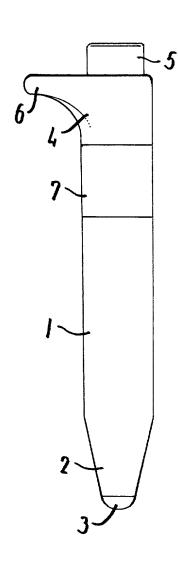
35 which is designed as a contact ring.

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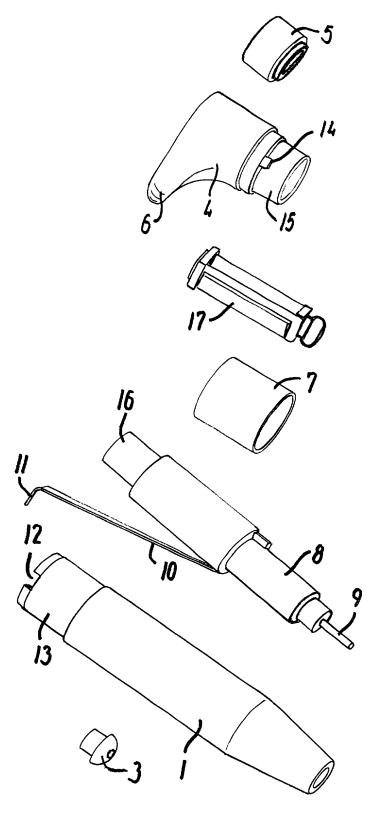
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2. An acupuncture stimulator according to claim 1,
c h a r a c t e r i z e d in that the leaf spring
contact (10) with a bent end portion (11) is fixed in
a recess (12) at the free edge of an end member (13) of
the exterior casing (1), said end member serving as a
support for the contact ring (7).

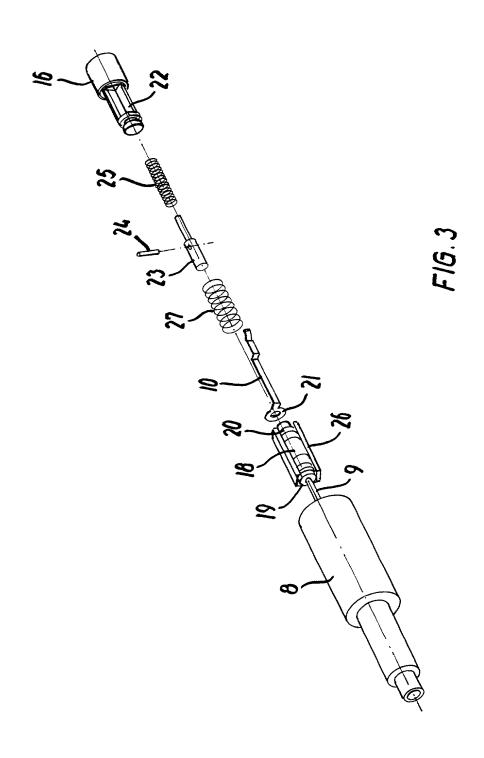
3. An acupuncture stimulator according to claim 1 or 2, c h a r a c t e r i z e d in that the actuator button (5) is mounted in a top member (4) placed in extension of the exterior casing (1) and the contact ring (7) and having a protruding abutment (6) as support for the forefinger knuckle of the user, when the actuator button (5) is operated by the thumb.



F16.1



F16.2



### Combined Declaration for Patent Application and Power of Attorney

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled (insert full title here) A handheld piezoelectric acupuncture stimulator

the specification of which (check one) [ ] is attached hereto; was filed in the United States under 35 U.S.C. §111 on \_\_\_\_\_\_, as [] USSN \_\*; or was/will be filed in the U.S. under 35 U.S.C. §371 by entry into the U.S. national stage of an international (PCT) application, PCT/ DK00/00355; filed 30 June 2000, entry requested on \_\_\_ \*; national stage application received USSN \_\_\_\_\_\*; §371/§102(e) date \_\_\_\_\_\* (\*if known), (if applicable). and was amended on \_ (include dates of amendments under PCT Art. 19 and 34 if PCT) I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above; and I acknowledge the duty to disclose to the Patent and Trademark Office (PTO) all information known by me to be material to patentability as defined in 37 C.F.R. § 1.56. I hereby claim foreign priority benefits under 35 U.S.C. §§ 119, 365 of any prior foreign application(s) for patent or inventor's certificate, or prior PCT application(s) designating a country other than the U.S., listed below with the "Yes" box checked and have also identified below any such application having a filing date before that of the application on which priority is claimed: BA 1999 00251 02 July 1999 \_ Denmark 🗩 [ ] (Day Month Year Filed) (Number) (Country) NO [ ] [] (Number) (Country) (Day Month Year Filed) NO YES [ ] [ ] (Number) (Country) (Day Month Year Filed) I hereby claim the benefit under 35 U.S.C. § 120 of any prior U.S. non-provisional Application(s) or prior PCT Application(s) designating the U.S. listed below, or under § 119(e) of any prior U.S. provisional applications listed below, and, insofar as the subject matter of each of the claims of this application is not disclosed in such U.S. or PCT application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the PTO all information as defined in 37 C.F.R. §1.56(a) which occurred between the filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and the protocol filing date of the prior application and th of the prior application and the national filing date of this application: (Day Month Year Filed) (Application Serial No.) (Status: patented, pending, abandoned) (Application Serial No.) (Day Month Year Filed) (Status: patented, pending, abandoned) I hereby appoint the following attorneys, with full power of substitution, association, and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. SHERIDAN NEIMARK, REG. NO. 20,520 - ROGER L. BROWDY, REG. NO. 25,618 - ANNE M. KORNBAU, REG. NO. 25,884 NORMAN J. LATKER, <u>REG. NO. 19,963</u> - IVER P. COOPER, <u>REG. NO. 28,005</u> - ALLEN C. YUN, <u>REG. NO. 37,971\*</u>
NICK S. BROMER, <u>REG. NO. 33,478</u> - Patent Agent DIRECT ALL TELEPHONE CALLS TO:

BROWDY AND NEIMARK
(202) 628-5197 ADDRESS ALL CORRESPONDENCE TO BROWDY AND NEIMARK, P.L.L.C. 419 Seventh Street, N.W. Washington, D.C. 20004

The undersigned hereby authorizes the U.S. Attorneys or Agents named herein to accept and follow instructions from INTERNATIONALT PATENT-BUREAU as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. Attorney or Agent and the undersigned. In the event of a change of the persons from whom instructions may be taken, the U.S. Attorneys or Agents named herein will be so notified by the undersigned.

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Page <u>2</u> of <u>2</u> Title:	Atty.Docket:
U.S. Application filed PCT_Application filed 30	June 2000 , Serial No. PCT/DK00/00355 ,

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

			_,_,	
FULL NAME OF FIRST INVENTOR	INVENTOR	AKTORE)	26-11-01	
reben NØDSKOV_	1.1001	OT TERM		
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Thyrasvej 5, DK-2960 RUNGSTED KYST, Denmark				
FULL NAME OF SECOND JOINT INVENTOR	INVENTOR'S SIC	GNATURE	DATE	
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FULL NAME OF THIRD JOINT INVENTOR	INVENTOR'S SIGNATURE		DATE	
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